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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/714,680	11/16/2000	Michael H. Bunyan	2802-257-006	4369

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EXAMINER

TARAZANO, DONALD LAWRENCE

ART UNIT

PAPER NUMBER

1773

DATE MAILED: 06/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/714,680

Applicant(s)

BUNYAN ET AL.

Examiner

D. Lawrence Tarazano

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 April 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 218.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) 14-19 is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 8.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

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DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-5, 9, and 10 are rejected under 35 U.S.C. 102(b) based upon a public use or sale of the invention. AI Technologies sold TP7609 a thermoplastic diamond filled interface film that re-melts at the operating temperature of electronic devices (Invoice dated 02/12/1993 to Fermi Labs). These materials are within the claimed thickness and melting range (Cool Pad TP7609 Data sheet). The method of application including applying pressure of more than 3 psi, so additional force is applied in the application of the film as claimed. The data sheets from TP7608 the same product line clearly teach the use of a release sheet as claimed.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Filled Thermal interface sheets sold by AI Technologies in view of Whitfield et al. (4,299,715).

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AI Technologies sold TP7609 a filled thermoplastic diamond filled interface that re-melts at the operating temperature of the electronic device (Invoice dated 02/12/1993 to Fermi Labs). These materials are within the claimed thickness and melting range (Cool Pad TP7609 Data sheet). The method of application including applying pressure of more than 3 psi, so additional force is applied in the application of the film as claimed. The data sheets from TP7608 part of the same product line clearly teach the use of a release sheet as claimed.

The essential difference between the claimed invention as those sold by AI Technologies as TP7608 and TP7609 is the specific use of an interface composition "consisting essentially of" 20-80% of a wax component and 80-20% by weight of thermally conductive filler.

Whitefield et al. teach filled waxy materials, which overlap in composition with those, claimed. The materials are molten at temperatures in the range of 50 to 60 deg. C. (column 5, lines 51), but a sold at room temperature. The materials can be applied by a variety of methods including: gaskets, brushed on in melt form, rubbed on, etc. (figures). However, they fail to teach the materials in the form of a film having a release sheet there on.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have produced the thermal interface sheets taught by AI Technologies from the materials taught by Whitefield et al. Whitefield et al. recite materials, which melt in the range taught by AI Technologies, and the materials are used in the same environment. This is merely the substitution of one functionally equivalent material for another.

It also would have been obvious to one having ordinary skill in the art at the time the invention was made to have formed the materials taught by Whitefield et al. in the form of sheet having a release layer there on, since this is an easy method of applying thermal interfaces as

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shown by AI Technologies. Furthermore, Whitefield et al. is non-restrictive regarding the possible methods of application.

Status of the Original Patent

5. The original patent, or an affidavit or declaration as to loss or inaccessibility of the original patent, must be received before this reissue application can be allowed. See 37 CFR 1.178.

Response to Arguments

1. Applicant's arguments filed 4-29-2002 have been fully considered but they are not persuasive.

The applicant argues that the "Cool Pad" TP7609 materials do not go through a phase change at the operating temperature of an electronic device because they have a glass transition temperature of -55 deg C.

The examiner disagrees with the applicants' assessment of the prior art. A glass transition temperature occurs, (a crystalline to amorphous phase change in the solid state) at the low temperature. However, the "Cool Pad" TP7609 materials also have a solid to liquid phase change (Melt/Flow Conditions), which occurs at a temperature of >55 deg. C. The material data sheet for TP609 clearly states, "When a power device goes into operation and generates heat in excess of 60 deg C, TP609 will "melt/reflow" to form intimate interfaces between the contact

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surface". For this reason, the examiner maintains the position that a phase change occurs with in the operating temperature as claimed.

Regarding the combination of AI Technologies data sheets in view of Whitfield et al. (4,299,715), the applicants argue that Whitfield et al. do not recognize that the materials can be made into free standing films. The applicants have merely attacked the reference for teaching the one element, which does not make the reference anticipate their invention. The reference was applied in combination with the information provided in the AI Technologies data sheets.

Unfortunately the data sheets only provide limited information regarding the types of materials used. Whitfield et al. teaches materials which melt at operating temperature to produce a good thermal interface. The materials described by AI Technologies also melt at elevated temperatures to achieve the same purpose.

The examiner maintains the position that one working in the art would look to Whitfield et al. for guidance regarding the materials, which would be useful as a thermal interface material. While Whitfield et al. do not appreciate the use of release layers to help stabilize a soft film, they recognize that various methods can be used to apply the material. The examiner maintains that given the disclosures by AI Technologies of the use of release layers and freestanding films, that it would have been obvious to one having ordinary skill in the art at the time the invention was made to have made films as taught by AI Technologies from the materials taught by Whitfield et al. This merely involves the substitution of one functionally equivalent material for another.

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Allowable Subject Matter

6. Claims 14-19 are allowed. The closest prior is the series of meltable filled thermoplastic films produced by AI Technologies; however, they are silent regarding the specific composition of materials used in their production. Furthermore, there is no obvious reason to use the claimed specific compositions, which comprise acrylic pressure sensitive adhesives and additional components since there is no guidance in what materials would be suitable. The examiner has reviewed the art presented in the IDS dated 3-17-2003. Any possible issues between the instant claims and those Duvall et al. will be held in abeyance until such time that the other outstanding issues are resolved.

Conclusion

2. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

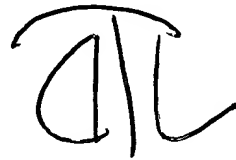
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Any inquiry concerning this communication or earlier communications from the examiner should be directed to D. Lawrence Tarazano whose telephone number is (703)-308-2379. The examiner can normally be reached on 8:30 to 6:00 (off every other Friday).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul J Thibodeau can be reached on (703)-309-2367. The fax phone numbers for the organization where this application or proceeding is assigned are (703)-872-9310 for regular communications and (703)-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)-308-0661.

D. Lawrence Tarazano
Primary Examiner
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A handwritten signature in black ink, appearing to be 'DLT' with a stylized flourish.

dlt
May 30, 2003